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FIRE FIGHTER TOOLS.(U)
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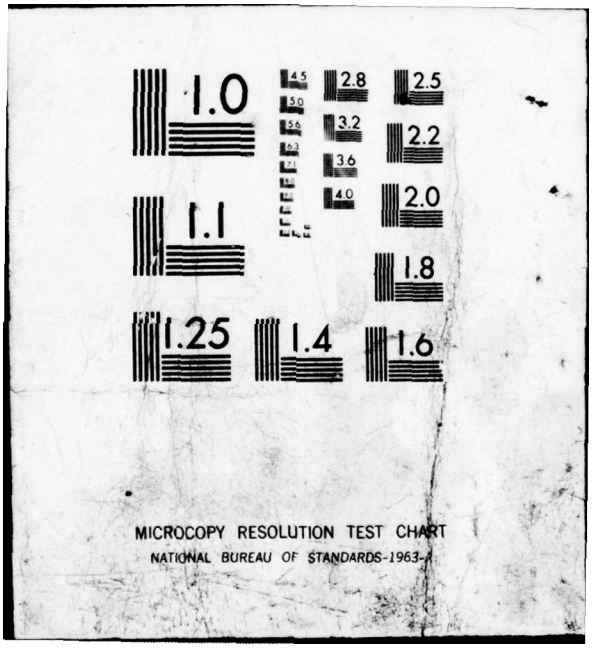
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FIRE FIGHTER TOOLS

EQUIPMENT AND SYSTEMS DIVISION
DET 1 HQ ADTC

JANUARY 1978

FINAL REPORT FOR PERIOD
OCTOBER 1976-OCTOBER 1977

Approved for public release; distribution unlimited

CIVIL AND ENVIRONMENTAL
ENGINEERING DEVELOPMENT OFFICE
(AIR FORCE SYSTEMS COMMAND)
TYNDALL AIR FORCE BASE
FLORIDA 32403

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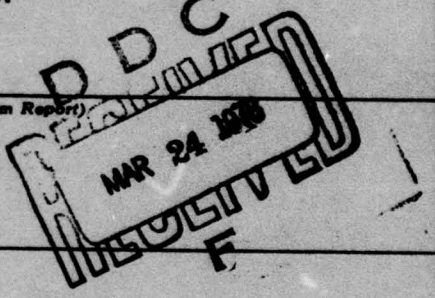

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Forcible entry
Crash firefighting
Fire fighting
Crash rescue

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The Civil and Environmental Engineering Development Office (CEEDO) conducted an evaluation of aircraft crash rescue/fire fighter tools and equipment. This study was necessitated due to the continued growth and development of new tools and the ever increasing numbers of tools being acquired by Air Force Fire Protection Organizations. The purpose of the study was to verify the concepts for fire fighting and rescue operations; to identify the tools and equipment presently carried on fire fighting and rescue vehicles; to determine the

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ITEM 20: ABSTRACT (CONCLUDED)

usefulness of all inventoried tools and equipment; and to determine a basic selection of tools and equipment that should be carried on fire fighting and rescue vehicles. The study consisted of four phases. The first phase covered a two-month period whereby a series of questionnaires and surveys were prepared by CEEDO/CNE and sent to the Major Air Commands who, in turn, sent them to the individual Air Force organizations under their command for completion. The surveys were returned to CEEDO/CNE for collation and final review. The second phase consisted of visits to select civilian fire protection organizations to review the tools and equipment and rescue concepts. These visits were conducted over a four-month period. The third phase was the identification of tools and equipment presently carried on fire/rescue vehicles that had actually been used in support of the fire protection mission. The fourth phase consisted of the selection of a basic set of fire fighter crash rescue tools in support of rescue, both structural and crash, and the identification of other tools and equipment to be used as supplemental items if required.

FOREWORD

This report was prepared by Detachment 1 (CEEDO) HQ ADTC, Tyndall AFB FL 32403, under Job Order 414N3001.

This report summarizes work done between 1 October 1976 and 31 October 1977. Mr Norman D. Knowles was the Project Officer.

This report has been reviewed by the Information Office (IO) and is releasable to the National Technical Information Service (NTIS). At NTIS it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

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SECTION I

INTRODUCTION

The United States Air Force Fire Protection Organizations are comprised of approximately 14,000 fire fighters distributed among some 300 installations and utilizing about 2,031 vehicles with a monetary value of approximately $182,369,477. If we add approximately $150 million in annual operating cost, you have the basis for wanting to know how these resources are employed and what criteria are used for effective day-to-day operations. It is recognized that a wide variety of fire fighting and rescue tools are available for use during fire fighting rescue operations. Resources have been established by fire protection organizations to adapt both standard and specialized tools and equipment to meet specific needs or specialized mission requirements. All USAF fire protection vehicles are provided with a basic selection of tools and equipment. Many fire protection managers have modified the basic selections of tools to meet specific requirements.

1.1 Objectives: The broad objectives were to verify the concepts for fire fighting and rescue operations and to determine the most effective tools to be used in support of those concepts. The specific or sub-objectives were brought about in five actions.

a. To identify tools and equipment presently carried on fire fighting and rescue vehicles and other tools adaptable to fire fighting operations.

b. To determine the usefulness of all inventoried tools and equipment.

c. To determine a basic selection of tools and equipment that should be carried on fire fighting and rescue vehicles.

d. To determine additional packages/selections of tools that augment the basic packages in light of individual mission requirements.

e. To identify additional requirements necessitated by any changes in the fire fighting or rescue concept.

SECTION II

SCOPE

It is recognized that a wide variety of fire fighting and rescue tools and equipment are available for use during fire fighting/rescue operations. Civilian and military fire protection organizations have adapted standard and specialized tools and equipment to meet specific needs. The selection of tools and equipment for fire fighting and rescue operations require the subjective judgement of personnel involved in the particular operations. It is possible to place various situations in categories by type of emergency conditions that exist; for example, rescue from a burning aircraft and effecting a forcible entry into a smoke-filled structure. Other categories can be developed that will encompass different emergency situations. The selection of tools and equipment required in each category will lead to a common requirement for basic tools. Additional tools and equipment may be added to the basic requirement to meet individual mission needs. Selection of proper tools for any given situation will increase the efficiency of the overall operation. Additionally, a standard selection of tools and equipment will be beneficial in preparing training requirements, in procurement and supply actions, as well as stabilizing the inventory of tools and equipment carried on fire fighting and rescue vehicles.

SECTION III

DEFINITION OF TERMS

3.1 Rescue Tools and Equipment: Implements that are primarily used to facilitate the rescue of personnel from situations that involve a distinct possibility of loss of life.

3.2 Fire Fighting Equipment: Implements that are used primarily to suppress or aid in the suppression of fire.

3.3 Dual Purpose Tools and Equipment: Tools and equipment that can be used in rescue efforts as well as fire fighting operations.

3.4 Rescue Situations: Conditions which prevail that would require immediate professional attention to remove individuals from the immediate effects of that condition.

3.5 Category of Rescue Situations: The information provided in the Questionnaire Surveys (Fire Crash Rescue Incident Survey) covering a two-year period revealed that USAF fire protection organizations deal primarily with five (5) types of rescue emergency situations.

(1) Aircraft Emergency (with fire).

(2) Aircraft Emergency (without fire).

(3) Structural Emergency (with fire).

(4) Structural Emergency (without fire).

(5) Transportation Accidents (automobile).

3.6 Rescue Concept: As outlined in AFR-92-1 the primary mission of USAF Fire Department Rescue Teams is to respond, effect entry when required, locate the victims, release/remove the victims and provide first aid during accidents of an emergency nature that are likely to occur on an Air Force installation.

SECTION IV

APPROACH

4.1 The approach for this work effort was to verify the concepts for fire/crash rescue operations as outlined in paragraphs 3.5 and 3.6. Additionally, the approach was to determine the most effective tools to be used in support of fire/crash operations. The approach was accomplished by the use of surveys (Appendix B) prepared by the Civil and Environmental Engineering Development Office and sent to the Operational Fire Protection organizations through the different Major Commands. Informational or courtesy copies of the test plan were sent to the US Army, US Navy, National Fire Protection Control Administration, and select civil fire protection organizations.

4.2 Upon completion, the surveys were returned to the Civil and Environmental Engineering Development Office for collation of the data provided. This data identified tools and equipment presently carried on fire fighting and rescue vehicles in addition to add-on tools adaptable to USAF fire protection rescue operations. Further, the survey information identified the actual number of times the tools were used over a period of two years, problems or difficulties encountered during usage, and the usefulness of the tools. This data collection was accomplished in 90 days using the Surveys and Questionnaire from the Test Plan and was the basis for the recommended basic tools selection (see Appendix A).

SECTION V

EVALUATION

5.1 Tools and equipment locations on some fire/crash vehicles had been changed and in some instances original tools or equipment had been removed and other items added. Examples were first aid fire extinguishers removed from the A/S32-P-10 Rescue Vehicle and Hurst Rescue Tool and Accessories added; the folding ladder removed from the A/S32-P-10 and aircraft access ladders and various litters added.

5.2 In some instances the data collection revealed that table of allowance high cost items (TA 490) such as air chisels, Hurst rescue tools, Porta Paks, etc., were added to vehicles. The data also indicated very minor or no usage involving such tools. Examples are the Hurst rescue tool and the air chisel. The Hurst tool was only used 28 times for 2,075 fire/crash responses. The air chisel was used 3 times for the same number of responses. It should be noted that the tools were used in support of off-base vehicle accidents. We realize that it is impossible to predict a certain tool will definitely become an asset in saving lives. We can, however, determine the value of a certain tool in a given situation. Acquisition of high cost tools and equipment must be given procurement approval, only if they can be effectively used in support of the fire protection mission.

5.3 A previous study conducted by one Major Command, and made available to the author, indicated that A/S32-P-10 Rescue Vehicles delivered to operational fire protection organizations had in most

cases added on tools far in excess of the mission requirements. The non-duplicative list was in excess of 100 additional items to fill a locally conceived need. The survey also indicated that 40 percent of the A/S32-P-10 Rescue Vehicles were over the 8,000-pound GVW prescribed by technical order publications. In most instances the items which contributed to the vehicle overweight problems were items not required or not in support of the rescue mission. Examples were 20-foot jumper cables, chain saw, 40 gallons of Halon 1211, 200 feet of one-inch hose, aircraft snatch cables, oxy-acetylene torch and accessories, etc.

SECTION VI

CONCLUSIONS

6.1 The data collection for this work effort indicates that the USAF fire protection organizations far exceed other DOD and civilian counterparts by type and numbers of rescue tools and equipment available with the exception of specialized equipment within large metropolitan areas. Visits to Los Angeles County Fire Department, New York City Fire Department, and Dallas/Ft Worth Airport also revealed that the use of tools and equipment and concepts of rescue operations are basically the same within all units visited.

6.2 One area which requires management attention is that of excess tools which have accumulated over a period of years with the change of equipment and methods. This excess equipment is now being placed on current fire/crash rescue vehicles to the extent that our vehicles are becoming overweight. Secondly, the information collated from the survey information did not identify a need for this excess equipment.

6.3 The high cost of specialized tools and limited space on our vehicles dictate that considerable thought should be applied prior to selecting add-on or specialized tools to the inventory. Tables of Allowance documents establish a basis of issue only and are not item authorization documents. Supervisors should review all requests and justifications for high cost Table of Allowance items.

6.4 It was noted during visits to select civil fire protection organizations that large items required in support of the rescue mission (Stokes litters, Hurst tools, necessary ladders, etc.) were transported on vehicles other than the primary rescue vehicle. As with the USAF fire departments, seldom does our rescue vehicle respond to any type of emergency without a support vehicle, either structural or crash. Transporting a large amount of rescue equipment can be accomplished on the support vehicles and is highly recommended.

6.5 During the collation of the data received from the surveys and the visits conducted to civil fire protection organizations, no new tools were identified that would be suitable for use within Air Force fire protection organizations.

6.6 Guidelines are established in the area of first aid requirements for Firefighter Rescueman Personnel. However, we should not lose sight of the fact that most departments have personnel assigned that are certified emergency medical technicians. Based on personnel qualification and storage space available on the vehicles, adequate medical/first aid equipment should be made available for use by Rescue Personnel.

6.7 Appendix A indicates a recommended basic selection of rescue tools and equipment by vehicle. This selection of tools is based on known usages reflected by the data collected during the work effort. The basic selection of tools afford the flexibility to be

increased or decreased dependent on the mission requirements. Additionally, appendix A lists additional tools which may be required in support of the mission. Supervisors at all levels must pay particular attention to the rescue tools inventory and assure that additional high cost tools are controlled on a mission needs requirement.

Further, guidelines should be established whereby the major Air Command/Fire Protection Office approves or coordinates on procurement actions for high cost items or other specialized tools.

SECTION VII

RECOMMENDATIONS

7.1 Based on the data received from the surveys and the visits to the select civil fire protection organizations, recommend the suggested list of tools and equipment provided in Appendix A be given primary consideration for use in support of the fire, crash rescue mission.

7.2 Extreme caution should be used when placing additional equipment on the vehicles to insure that gross vehicle weight limits are not violated. In addition, consideration should be given to transporting large type tools or equipment on vehicles responding with the A/S32-P-10 rescue vehicle.

7.3 Finally, if major location changes are made for vehicle equipment, then the user should submit an AFTO Form 22, Technical Order System Improvement Report and Reply, to reflect the changes made and to receive formal approval for those changes.

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APPENDIX A

RECOMMENDED TOOLS LISTING

RECOMMENDED TOOLS AND EQUIPMENT FOR A/S32P-10

Item	Quantity
Engine Driven Blower	2
Portable Generator	1
Air Breathing Apparatus	3
Power Saw	1
Fire Extinguisher, Co_2, 15 lb	1
Fire Extinguisher, Pressurized Water	1
Folding Ladder	1
Fireman's Axe	2
Electric Hand Lanterns	2
Pry Axe	2
Disarming Tool	1
Truckman's Belt	1
Tool Kit	1
Portable Floodlights	2
Shovel	1
Rubber Plugs	6
Safety Pins	6
Insulated Cutters	1
V-Blade Knife (Harness Cutter)	2
Manila Rope	2

RECOMMENDED TOOLS AND EQUIPMENT FOR A/S32P-10

Item	Quantity
Handwood Plugs	6
"Y" Connection	1
Extension Cords	2
Pike Pole	1
Goggles	3
Life Lines, 1/4", min 100 ft ea	2
First Aid Kit	1
Resuscitator, Hand Operated	1

SUGGESTED TOOLS TO BE CARRIED BY MAJOR FIREFIGHTING VEHICLES

A/S32P-2	
Crash Axe	1
Breathing Apparatus	2
Pike Pole	1
Disarming Tool	1
Wrecking-Bar/Claw Tool	1
Power Saw	1
Rescue Slide/Chute (if required)	1
A/S32P-4	
Axe, Fire	1
Fire Extinguisher (CB)	2
Ladder, 21 ft, folding	1
Crowbar	1
Claw Tool	1
Saw, Gasoline Engine Driven	1
Pike Pole	1
Bolt Cutter	1
Disarming Tool	1
Breathing Apparatus	2
A/S32P-8	
Fire Extinguisher (Water)	1
Ladder, Extension 24 ft	1
Ladder, Roof 14 ft	1

SUGGESTED TOOLS TO BE CARRIED BY MAJOR FIREFIGHTING VEHICLES cont'd

Axe, Fire	1
Axe, Chopping	1
Pike Pole	1
Fire Extinguisher (CO_2)	2
Bar, Wrecking	2
Crowbar	1
Lantern, Electric	2
Strap, Hose/ladder	2
Breathing Apparatus	2

A/S32P-12

Fire Extinguisher (CO_2)	1
Pike Pole	1
Crowbar	1
Bar, Wrecking	1
Axe, Fire	1
Cutter, Bolt	1
Lantern, Electric	1
Strap, Hose/Ladder	1
Ladder, Extension 36 ft	1
Ladder, Roof, 14 ft	1
Breathing Apparatus	2

A/S32P-15

9# Halon 1211 Extinguisher	2
Hose, Soft Suction, 16 ft x 4½"	1
Wrench, Hydrant 4½"	1
Wrench, Spanner 4½"	1
Cord, Extension, 115 volt AC, 100 ft	1

SUGGESTED OPTIONAL RESCUE TOOLS AND EQUIPMENT FOR VEHICLES

Item	Quantity
Jaw-of-Life	As Req'd
Air-chisel	"
Smoke Ejectors W/hangers	"
Litter, Rigid, Stokes	"
Power Kit - Hydraulic	"
First Aid Kit	"
Halligan Tool	"
Litter, Back-board, full length	"
Litter, Back-board, half length	"
Truckman's Belt	"
Lifelines	"

APPENDIX B

SURVEY DATA COMPILATION

This appendix includes forms, survey questionnaires and tool statistics used for collecting data from USAF Fire Protection Organizations and was the basis for the Recommended Tools Selection.

a. The Fire/Crash/Rescue Incident Survey provided us with the types and numbers of tools used during emergency responses over a two-year period.

b. The miscellaneous Fire Fighting and Rescue Equipment form provided a list of mounted equipment by type and numbers, where this equipment was mounted on the vehicles, if it comes from depot as a part of the vehicle equipment, if it was added from TA 490, if it came from other procurement sources.

(Based on 2,075 Instances)

	Number of Tools Available	Number of Times Used	Percentage of Use
A/S 32P-10			
Engine Driven Blower	482	422	87.6
Portable Generator	241	31	12.9
Air Breathing Apparatus	723	185	25.6
Power Saw	241	37	15.4
Fire Extinguisher, CO^2, 15 lb	241	102	42.3
Fire Extinguisher, Pressurized Water	241	44	18.3
Folding Ladder	241	23	09.5
Electric Hand Lanterns	482	58	12.0
Pry Axe	482	75	15.6
Disarming Tool	241	13	05.4
Tool Kit	241	65	27.0
Portable Floodlights	482	31	06.4
Shovel	241	19	07.9
Safety Pins	1446	12	00.8
Insulated Cutters	241	14	05.8
V-Blade Knife (Hardness Cutter)	482	7	01.5
Manila Rope	482	3	00.6
Handwood Plugs	1446	5	00.3
"Y" Connection	241	31	12.9
Extension Cords	482	31	06.4
Pike Pole	241	109	45.2
Goggles	723	37	05.1
First Aid Kit	241	91	37.8
Ambu-Bag	241	51	31.2

(Based on 2,075 Instances)

	Number of Tools Available	Number Of Times Used	Percentage of Use
A/S 32P-2			
Crash Axe	243	3	01.2
Breathing Apparatus	486	5	01.0
Pike Pole	243	1	01.7
Disarming Tool	243	0	00.0
Wrecking-Bar/Claw Tool	243	4	01.6
Power Saw	243	0	00.0
Rescue Slide/Chute (if required)	243	0	00.0
A/S 32P-4			
Axe, Fire	528	3	00.6
Fire Extinguisher (CB)	1056	4	00.4
Ladder, 21 ft, Folding	528	6	01.1
Crowbar	528	11	02.1
Claw Tool	528	3	00.6
Saw, Gasoline Engine Driven	528	1	00.2
Pike Pole	528	6	01.1
Bolt Cutter	528	1	00.2
Disarming Tool	528	0	00.0
Breathing Apparatus	1056	13	01.2
A/S 32P-8			
Fire Extinguisher (Water)	283	20	07.1
Ladder, Extension 24 ft	283	9	03.2
Ladder, Roof 14 ft	283	21	07.4
Axe, Fire	283	14	04.9
Axe, Chopping	283	5	01.8
Pike Pole	283	35	12.4
Bar, Wrecking	566	9	01.6

(Based on 2,075 Instances)

	Number of Tools Available	Number of Times Used	Percentage of Use
Crowbar	283	14	04.9
Lantern, Electric	566	16	02.8
Strap, Hose/Ladder	566	7	01.2
Breathing Apparatus	566	39	06.9
A/S 32P-12			
Fire Extinguisher (CO^2)	514	12	02.3
Pike Pole	257	39	15.2
Crowbar	257	5	01.9
Bar, Wrecking	257	8	03.1
Axe, Fire	257	11	04.3
Cutter, Bolt	257	6	02.3
Lantern, Electric	514	19	03.7
Strap, Hose/Ladder	514	17	03.3
Ladder, Extension 35 ft	257	12	04.7
Ladder, Roof, 14 ft	257	24	09.3
Breathing Apparatus	514	26	05.1
Optional Rescue Tools and Equipment Required in Support of the Fire Protection Mission:			
Jaws-of-Life (Hurst)	63	28	44.4
Air-Chisel	22	6	27.3
Litter, Ridget, Stokes	29	4	13.8

(Based on 2,075 Instances)

	Number of Tools Available	Number of Times Used	Percentage of Use
Power Kit	19	7	36.8
Assorted Medical Supplies used to Stabilize Patients	91	46	50.5
Halligam Tool	23	7	30.4
Life-Lines	482	42	08.7
Litter, Back-Board, full length	35	17	48.6
Litter, Back-Board, half length	22	8	36.4
Scoop Litter	14	2	14.3
Dry Chemical Extinguisher 30 lb	1446	23	01.6

(Based on 2,075 Instances)

	Number of Tools Available	Number of Times Used	Percentage of Use
Halligam Tool	23	7	30.4
Life-Lines	482	42	08.7
Litter, Back-Board, full length	35	17	48.6
Litter, Back-Board, half length	22	8	36.4
Scoop Litter	14	2	14.3
Dry Chemical Extinguisher 30 lb	1446	23	01.6

Fire/Crash/Rescue Incident Survey

In order to assist in the selection of a basic set of fire fighter tools and equipment for use in support of the USAF Fire Protection mission, request the following survey be completed to cover the periods of 1 Jan 75 through 1 Jan 77:

a. Name of installation.

b. Date and time of incident.

c. Type of incident (aircraft, structural, automobile, etc.).

d. Location of incident (on/off base).

e. Number of victims involved.

f. Type and number of units responding.

g. Support equipment, extraction tools used.

h. Difficulties experienced during operation, i.e., delays, equipment malfunctions.

i. A brief description of the rescue concept employed by the rescue crew.

A/S32P-4

MISCELLANEOUS FIRE FIGHTING AND RESCUE EQUIPMENT

ITEM	QT	STORAGE LOCATION	OVM EQUIP		TA 490 EQUIP		OTHER EQUIP	REMARKS
			YES	NO	YES	NO		
AXE, FIRE	1							
FIRE EXTINGUISHER(CB)	2							
FIRE EXTINGUISHER (DRY CHEMICAL)	2							
LADDER, 21 FT, FOLDING	1							
CROWBAR	1							
CLAY TOOL	1							
SAW, GASOLINE ENGINE DRIVEN	1							
LANTERN,ELECTRIC	1							
PIKE POLE	1							
BOLT CUTTER	1							

NAME OF INSTALLATION _____ Sample Survey

A/S32P-2

MISCELLANEOUS FIRE FIGHTING AND RESCUE EQUIPMENT

ITEM	QT	STORAGE LOCATION	OVM EQUIP		TA 490 EQUIP		OTHER EQUIP	REMARKS
			YES	NO	YES	NO		

NAME OF INSTALLATION _____ Sample Survey

A/S32P-8

MISCELLANEOUS FIRE FIGHTING AND RESCUE EQUIPMENT

ITEM	QT	STORAGE LOCATION	OVM EQUIP		TA 490 EQUIP		OTHER EQUIP	REMARKS
			YES	NO	YES	NO		
FIRE EXTINGUISHER (WATER)	1							
LADDER, EXTENSION, 24 FT	1							
LADDER, ROOF, 14 FT	1							
AXE, FIRE	1							
AXE, CHOPPING	1							
PIKE POLE	1							
FIRE EXTINGUISHER(CO_2)	1							
BAR, WRECKING	2							
CROWBAR	1							
LANTERN, ELECTRIC	2							
STRAP, HOSE/LADDER	2							

NAME OF INSTALLATION _____ Sample Survey

A/S32P-12

MISCELLANEOUS FIRE FIGHTING AND RESCUE EQUIPMENT

ITEM	QT	STORAGE LOCATION	OVM EQUIP		TA 490 EQUIP		OTHER EQUIP	REMARKS
			YES	NO	YES	NO		
FIRE EXTINGUISHER(CO_2)	2							
PIKE POLE, 8 FT	1							
CROWBAR	1							
BAR, WRECKING	1							
AXE, FIRE	1							
AXE, CHOPPING	1							
CUTTER, BOLT	1							
LANTERN, ELECTRIC	2							
STRAP, HOSE AND LADDER	1							
LADDER, EXTENSION, 36 FT	1							
LADDER, ROOF, 14 FT	1							

NAME OF INSTALLATION _____ Sample Survey

A/S32P-10

MISCELLANEOUS FIRE FIGHTING AND RESCUE EQUIPMENT

ITEM	QT	STORAGE LOCATION	OVM EQUIP		TA 490 EQUIP		OTHER EQUIP	REMARKS
			YES	NO	YES	NO		
PORTABLE FLOODLIGHTS	2							
SHOVEL	1							
RUBBER PLUGS	6							
SAFETY PINS	6							
INSULATED CUTTERS	1							
V-BLADE KNIFE (HARNESS CUTTER)	2							
MANILA ROPE	2							
HARDWOOD PLUGS	6							
"Y" CONNECTION	1							
EXTENSION CORDS	2							
FOLDING LITTER	1							
PIKE POLE	1							
GOGGLES	3							

NAME OF INSTALLATION _____ Sample Survey

A/S32P-10

MISCELLANEOUS FIRE FIGHTING AND RESCUE EQUIPMENT

ITEM	QT	STORAGE LOCATION	OVM EQUIP		TA 490 EQUIP		OTHER EQUIP	REMARKS
			YES	NO	YES	NO		
ENGINE DRIVEN BLOWER	2							
PORTABLE GENERATOR	1							
AIR BREATHING APPARATUS	4							
POWER SAW	1							
FIRE EXTINGUISHER(BLUE)	3							
FIRE EXTINGUISHER(RED)	2							
FIRE EXTINGUISHER (YELLOW)	1							
FOLDING LADDER	1							
FIREMAN'S AXE	2							
ELECTRIC HAND LANTERNS	2							
PRY AXE	3							
TRUCKMAN'S BELT	3							
DISARMING TOOL	1							

NAME OF INSTALLATION _____ Sample Survey

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INITIAL DISTRIBUTION

DDC/TCA	2	HQ MAC/DEMF	1
Det 1 (CEEDO) HQ ADTC/PRT	1	HQ AAC/DEMF	1
AUL	1	HQ AFSC/DEMF	1
USA/MERADCOM/DRDME-GE	1	HQ SAC/DEMF	1
USA/TRADOC/ATEN-FE-FP	1	HQ ATC/DEMF	1
HQ NAVMAT/04F2	1	HQ ADCOM/DEMF	1
HQ NAVFAC/10F	1	HQ AFLC/DEMF	1
NRL/6180	1	W-R ALC/MMIRAB	1
HQ NAVAIR/53433A	1	AFCEC/DOZ	1
FAA-NAFEC/ANA-420	1	Det 1 (CEEDO) HQ ADTC/CNE	5
NGB/DEM	1	3340 TTG/TTMF	1
AFRES/DEMF	1	NFPCA	1
HQ PACAF/DEMF	1	HQ AFSC/SDAE	1
HQ TAC/DEMF	1	FAA/AAP-720	1
HQ USAFE/DEMF	1	Dallas/Ft Worth Airport	1
		Los Angeles County Fire Dept	1

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